CLAIM AMENDMENTS

1. (Currently Amended) A porous particulate composition comprising a matrix of one or more catalytic components and at least one polymer [[olefin-based material]] having a plurality of free olefin groups, wherein the catalyst component is an organometallic complex selected from the group consisting of Group 3-10 metals, non-metals, lanthanide metals, actinide metals and combinations thereof; and wherein the matrix is formed by reaction of the catalytic component and the free olefin groups of the polymer [[olefin-based material]].

2. (Currently Amended) The composition of claim 1, wherein the polymer having a plurality of free olefin groups [[olefin-based material]] is a macroporous polymer prepared in the presence of a porogen and is selected from the group consisting of divinylbenzene polymers, divinylbenzene copolymers, styrene/divinylbenzene copolymers, divinylbenzene resins, cross-linked divinylbenzene polymers, styrene/butadiene copolymers, styrene/isoprene copolymers, vinylsiloxane polymers, alkylsiloxane polymers, allylsiloxane polymers, condensation products of siloxane polymers having a plurality of olefin groups and combinations thereof [[; and wherein the free olefin groups are optionally disposed on the surface of the olefin-based material]].

3. (Currently Amended) The composition of claim 1, wherein the average pore diameter of the polymer having a plurality of free olefin groups is 100 Å or greater and the polymer comprises at least 0.01 mmol/g residual olefin groups [[olefin based material is prepared by incorporating a plurality of free olefin groups into a solid selected from the group consisting of silica, silica polymorphs, alumina, alumina polymorphs, magnesia, magnesia polymorphs, siloxanes, alumoxanes, alkylalumoxanes, alkylsiloxanes, aluminosilicates, clays, zeolites and combinations thereof; the olefin-based material optionally having the free olefin groups disposed on the surface of the solid]].

4. (Currently Amended) The composition of claim 1, wherein the [[catalytic component is selected from the group consisting of olefin polymerization catalysts,

Ziegler-Natta catalysts, metallocene complexes of Group 3-10 metals, metallocene complexes of non-metals, metallocene complexes of lanthanide metals, metallocene complexes of actinide metals, single-site catalysts, single-site metallocene catalysts, and combinations thereof; and wherein the]] matrix further comprises [[a plurality of]] one or more olefin polymerization catalyst[[ic]] components selected from the group consisting of: Ziegler-Natta catalysts, metallocene complexes of Group 3-10 metals, metallocene complexes of non-metals, metallocene complexes of lanthanide metals, metallocene complexes of actinide metals, single-site catalysts, single-site metallocene catalysts and combinations thereof [[;]], at least one activator component and is used for polymerizing at least one olefin monomer selected from the group consisting of unbranched aliphatic olefins having from 2 to 12 carbon atoms, branched aliphatic olefins having from 4 to 12 carbon atoms, unbranched and branched aliphatic α-olefins having from 2 to 12 carbon atoms, conjugated olefins having 4 to 12 carbon atoms, aromatic olefins having from 8 to 20 carbons, unbranched and branched cycloolefins having 3 to 12 carbon atoms, unbranched and branched acetylenes having 2 to 12 carbon atoms, and combinations thereof.

5. (Currently Amended) The composition of claim 1, wherein the matrix is selected from the group of [[represented by a]] formulas consisting of: $[Cp^1Cp^2MR_x\ L]^+\ [NCA]^-$, wherein M is a Group 4 metal, Cp^1 is a substituted or non-substituted cyclopentadienyl ring and Cp^2 is the same or different, substituted or non-substituted cyclopentadienyl ring and may be bridged symmetrically or asymmetrically to Cp^1, R is hydride, alkyl, silyl, germyl or an aryl group, x is an integer equal to 0 or 1, L is formed by reaction of the Group 4 metal complex and the free olefin groups of the polymer [[an olefin-based material]] and NCA is a non-coordinating anion; [[or the matrix is represented by a formula]] $[Cp^1Cp^2MR]^+\ [NCA]^-$, wherein M is a Group 4 metal, Cp^1 is a substituted or non-substituted cyclopentadienyl ring and Cp^2 is the same or different, substituted or non-substituted cyclopentadienyl ring and may be bridged symmetrically or asymmetrically to Cp^1, R is a hydrocarbyl group formed by reaction of the Group 4 metal complex and the free olefin groups of the polymer [[derived from the hydrozirconation of an olefin-based

material]] and NCA is a non-coordinating anion; [[or the matrix is represented by a formula]] $[Cp^1MR_xL]^+$ $[NCA]^-$, wherein M is a Group 4 or 6 metal, Cp^1 is a substituted or non-substituted cyclopentadienyl ring, R is a hydride, alkyl, silyl, germyl or an aryl group, x is an integer ranging from 0 to 6, L is formed by reaction of the Group 4 or 6 metal complex and the free olefin groups of the polymer [[an olefin-based material]] and NCA is a non-coordinating anion; [[or the matrix is represented by a formula]] $[(Multidentate)MR_xL]^+$ $[NCA]^-$, wherein M is a Group 4 or 6 or 8 or 9 or 10 metal, R is hydride, alkyl, silyl, germyl, aryl, halide or alkoxide group, x is an integer equal to 0, 1 or 2, multidenate is a bidentate, tridentate or tetradentate ligand containing nitrogen, sulfur, phosphorus and/or oxygen as coordinating atoms to the metal, L is formed by reaction of the Group 4 or 6 or 8 or 9 or 10 metal complex and the free olefin groups of the polymer [[an olefin-based material]] and NCA is a non-coordinating anion; [[or the matrix is represented by a formula]] $(Multidentate)MR_xL$, wherein M is a Group 4 or 6 or 8 or 9 or 10 metal, R is hydride, alkyl, silyl, germyl, aryl, halide or alkoxide group, x is an integer equal to 0, 1 or 2, multidenate is a bidentate, tridentate or tetradentate ligand containing nitrogen, sulfur, phosphorus and/or oxygen as coordinating atoms to the metal and L is formed by reaction of the Group 4 or 6 or 8 or 9 or 10 metal complex and the free olefin groups of the polymer [[an olefin-based material]]; [[or the matrix is represented by a formula]] $(Cp^1)_x(Cp^2)_yMR_xL^+[NCA]^-$, wherein M is a lanthanide or an actinide metal, R is hydride, alkyl, silyl, germyl, aryl, halide, alkoxide, amide or solvent ligand, R may also be a bidentate ligand containing nitrogen, sulfur, phosphorus and/or oxygen, x = 0-2, y = 0-2, L is formed by reaction of the lanthanide or actinide metal complex and the free olefin groups of the polymer [[an olefin-based material]] and NCA is a non- coordinating anion and combinations thereof.

6. (Currently Amended) The composition of claim 1, wherein the matrix is prepared from one or more polymers [[olefin-based materials]] having a particle [[diameters]] size ranging from 5 nm to 1000 µm.

7. (Withdrawn) An olefin polymerization process that comprises the steps of contacting at least one olefin monomer and a composition comprising a matrix of one or more catalytic components and at least one olefin-based material, wherein the catalyst component is an organometallic complex selected from the group consisting of Group 3-10 metals, non-metals, lanthanide metals, actinide metals and combinations thereof, the olefin-based material further comprising an organic material having a plurality of free olefin groups and wherein the matrix is formed by reaction of the catalytic component and the free olefin groups of the olefin-based material; and polymerizing the olefin monomer to produce a polyolefin.

8. (Withdrawn) The process according to claim 7, wherein the olefin monomer is selected from the group consisting of unbranched aliphatic olefins having from 2 to 12 carbon atoms, branched aliphatic olefins having from 4 to 12 carbon atoms, unbranched and branched aliphatic α-olefins having from 2 to 12 carbon atoms, conjugated olefins having 4 to 12 carbon atoms, aromatic olefins having from 8 to 20 carbons, unbranched and branched cycloolefins having 3 to 12 carbon atoms, unbranched and branched acetylenes having 2 to 12 carbon atoms, and combinations thereof; and wherein the olefin monomer is a polar olefin monomer having from 2 to 12 carbon atoms and at least one atom selected from the group consisting of O, N, B, Al, S, P, Si, F, Cl, Br and combinations thereof.

9. (Withdrawn) The process according to claim 7, wherein the olefin monomer is selected from the group consisting of ethylene, propene, 1-butene, 1-hexene, butadiene, styrene, alpha-methylstyrene, cyclopentene, cyclohexene, cyclohexadiene, norbornene, norbornadiene, cyclooctadiene, divinylbenzene, trivinylbenzene, acetylene, diacetylene, alkynylbenzene, dialkynylbenzene, ethylene/1-butene, ethylene/isoprene, ethylene/1-hexene, ethylene/1-octene, ethylene/cyclopentene, ethylene/cyclohexene, ethylene/butadiene, ethylene/hexadiene, ethylene/styrene, ethylene/acetylene, propene/1-butene, propene/styrene, propene/butadiene, propene/1,6-hexadiene, propene/acetylene,

ethylene/propene/1-butene, ethylene/propene/1-hexene, ethylene/propene/1-octene, and combinations thereof.

10. (Withdrawn) The process according to claim 7, wherein the polymerization is selected from the group consisting of a copolymerization of ethylene and higher α-olefins, a copolymerization of propene and higher α-olefins, and a copolymerization of styrene and higher α-olefins.

11. (Withdrawn) The process according to claim 7, wherein the polyolefin produced is selected from the group consisting of HDPE, LDPE, LLDPE, polyolefins incorporating a plurality of olefin monomers, polyolefins incorporating α-olefins, copolymers of ethylene and α-olefins selected from the group consisting of 1-butene, 1-hexene and 1-octene, stereospecific polyolefins, stereoregular polyolefins, and polyolefins having stereospecific structures selected from the group consisting of atactic, isotactic, syndiotactic, hemi-isotactic and stereoregular blocks and combinations thereof.

12. (Withdrawn) The process according to claim 7, wherein a polyolefin particle essentially retains the shape of a prepared matrix particle.

13. (Withdrawn) The process according to claim 7, wherein the catalytic component is selected from the group consisting of olefin polymerization catalysts, Ziegler-Natta catalysts, metallocene complexes of Group 3-10 metals, metallocene complexes of non-metals, metallocene complexes of lanthanide metals, metallocene complexes of actinide metals, single-site catalysts, single site metallocene catalyst and combinations thereof; wherein the matrix further comprises a plurality of catalytic components and at least one activator component; and wherein the matrix is represented by a formula $[Cp^1Cp^2MR_xL]^+[NCA]^-$, wherein M is a Group 4 metal, Cp^1 is a substituted or non-substituted cyclopentadienyl ring and Cp^2 is the same or different, substituted or non-substituted cyclopentadienyl ring and may be bridged symmetrically or asymmetrically to Cp^1, R is hydride, alkyl, silyl, germyl or an aryl group, x is an integer equal to 0 or 1, L is an

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olefin-based material and NCA is a non-coordinating anion; or the matrix is represented by a formula $[Cp^1Cp^2MR]^+ [NCA]^-$, wherein M is a Group 4 metal, Cp^1 is a substituted or non-substituted cyclopentadienyl ring and Cp^2 is the same or different, substituted or non-substituted cyclopentadienyl ring and may be bridged symmetrically or asymmetrically to Cp^1, R is a hydrocarbyl group derived from the hydrozirconation of an olefin-based material and NCA is a non-coordinating anion; or the matrix is represented by a formula $[Cp^1MR_xL]^+ [NCA]^-$, wherein M is a Group 4 or 6 metal, Cp^1 is a substituted or non-substituted cyclopentadienyl ring, R is a hydride, alkyl, silyl, germyl or an aryl group, x is an integer ranging from 0 to 6, L is an olefin- based material and NCA is a non-coordinating anion; or the matrix is represented by a formula $[(\text{Multidentate}) MR_xL]^+ [NCA]^-$, wherein M is a Group 4 or 6 or 8 or 9 or 10 metal, R is hydride, alkyl, silyl, germyl, aryl, halide or alkoxide group, x is an integer equal to 0, 1 or 2, multidenate is a bidentate, tridentate or tetradentate ligand containing nitrogen, sulfur, phosphorus and/or oxygen as coordinating atoms to the metal, L is an olefin-based material and NCA is a non-coordinating anion; or the matrix is represented by a formula (Multidentate) MR_xL, wherein M is a Group 4 or 6 or 8 or 9 or 10 metal, R is hydride, alkyl, silyl, germyl, aryl, halide or alkoxide group, x is an integer equal to 0, 1 or 2, multidenate is a bidentate, tridentate or tetradentate ligand containing nitrogen, sulfur, phosphorus and/or oxygen as coordinating atoms to the metal and L is an olefin-based material; or the matrix is represented by a formula $(Cp^1)_x(Cp^2)_yMR_xL+[NCA]$, wherein M is a lanthanide or an actinide metal, R is hydride, alkyl, silyl, germyl, aryl, halide, alkoxide, amide or solvent ligand, R may also be a bidentate ligand containing nitrogen, sulfur, phosphorus and/or oxygen, x = 0-2, y = 0-2, L is an olefin-based material and NCA is a non-coordinating anion.

14. (Withdrawn) The process according to claim 7, wherein the polyolefin is prepared in a reactor system selected from the group consisting of gas phase reactors, slurry phase reactors and solution phase reactors and combinations thereof.

15. (Withdrawn) A coating process comprising depositing the matrix of claim 1 on a substrate and polymerizing olefin monomer to produce a polyolefin coated surface, object or particulate.

16. (Withdrawn) The process according to claim 15, wherein the substrate is selected from the group consisting of clays, micas, silicates, metals, polymer particles, non-metal oxides, organometallic oxides and inorganic oxides.

17. (Withdrawn) A process for preparing a composite of substrate and polyolefin in-situ using the matrix of claim 1 in combination with at least one substrate.

18. (Withdrawn) The process according to claim 17, wherein the substrate is selected from the group consisting of clays, micas, silicates, metals, polymer particles, non-metal oxides, organometallic oxides and inorganic oxides.

19. (Withdrawn) The process according to claim 17, wherein polyolefin properties are modified.

20. (Withdrawn) A process for the production of hydrophobically modified particles in the form of spheres, surfaces and objects in which the catalytic matrix is disposed on the surfaces thereof.

21. (New) A porous particulate composition comprising a matrix of at least one macroporous polymer having a plurality of free olefin groups selected from the group consisting of: divinylbenzene polymers, divinylbenzene copolymers, styrene/divinylbenzene copolymers, divinylbenzene resins, cross-linked divinylbenzene polymers, styrene/butadiene copolymers, styrene/isoprene copolymers, vinylsiloxane polymers, alkylsiloxane polymers, allylsiloxane polymers and combinations thereof; and at least one Ziegler-Natta catalyst, wherein the matrix is formed by reaction of the at least one Ziegler-Natta catalyst and the free olefin groups of the polymer.

22. (New) The porous particulate composition according to claim 21, wherein the Ziegler-Natta catalyst comprises at least one titanium compound, at least one magnesium compound and at least one aluminum compound.

23. (New) A porous particulate composition comprising a matrix of at least one macroporous polymer having a plurality of free olefin groups selected from the group consisting of: divinylbenzene polymers, divinylbenzene copolymers, styrene/divinylbenzene copolymers, divinylbenzene resins, cross-linked divinylbenzene polymers, styrene/butadiene copolymers, styrene/isoprene copolymers, vinylsiloxane polymers, alkylsiloxane polymers, allylsiloxane polymers, and combinations thereof; and at least one catalyst further comprising at least one chromium compound and at least one silicon compound, wherein the matrix is formed by reaction of the at least one catalyst and the free olefin groups of the polymer.

Interview Pursuant to 37 C. F. R. §1.133

Applicants thank the Examiner for an interview of February 17, 2003. The prior art of record cited in the above mentioned Office Action, a non-patent publication, Abstract, American Chemical Society, Book of Abstracts, 218th ACS National Meeting, Aug. 22-26 (1999), INOR 526, XP009013883 (J. G. Matisons *et al.*) was discussed with Examiner. Agreement was reached with the Examiner that a polymeric material having a plurality of free olefin groups overcame the teaching of Matisons *et al.*, which discloses modification of an inorganic solid, namely silica with a vinyl silane moiety. In addition, an additional non-patent publication, Metallorganichecheskaya Khimiya, 1992, 5(6), 1386-1390, Abstract and article (Baukova, *et al.*) was discussed with the Examiner. Baukova *et al.* teaches that reaction of polybutadiene with Schwartz's reagent does not provide a porous particulate material, but affords an inadequately characterized substance that is readily soluble in aromatic hydrocarbons and sensitive to moisture and oxygen. Agreement was reached with the Examiner that Baukova *et al.* did not teach Applicants porous particulate composition. An English translation of Baukova, *et al.* was provided to Examiner. Examiner further requested a terminal disclaimer over pending U. S. Pat. Appl. Ser. No. 09/973,261. Since the above-mentioned application is still pending, Applicant will consider filing a terminal disclaimer in accordance with 37 C.F.R. §1.321(b)(c) at the time that Claims 1-6 and 21-23 are allowed.

Support for Amendments

Claim amendments are fully supported in the specification. Amendments to claim 1 of the olefin based material being a polymer having a plurality of free olefin groups is found at page 7, lines 27 to 29; at page 8, line 30 to page 9, line 32 and at page 11, lines 9 to 26. Amendments to claim 2 of the olefin based material being a polymer having a plurality of free olefin groups is found at page 7, lines 27 to 29; at page 8, line 30 to page 9, line 32 and at page 11, lines 9 to 26 and the addition of allyl siloxanes and condensation products of siloxanes is found at page 8, lines 16 to 29. Claim 3 was amended to include that the average pore diameter of the polymer having a plurality of

free olefin groups is 100 Å or greater and the polymer comprises at least 0.01 mmol/g residual olefin groups and is found at page 9, lines 25 to 32 and at page 19, lines 12 to 14 (Example 1). Claim 4 was amended to clarify that one or more catalysts are usefully employed in accordance with the invention and is found at page 5, lines 15 to 17. Claim 5 was amended to class the different matrices as a Markush group and to further clarify that metal to carbon bonds are formed in the reaction of the metal complex with the free olefin groups of the polymer and is found at page 17, lines 19 to 23 and Examples 3-11 at pages 19 to 24. Amendments to claim 6 of the olefin based material being a polymer having a plurality of free olefin groups is found at page 7, lines 27 to 29; at page 8, line 30 to page 9, line 32 and at page 11, lines 9 to 26 and particle diameter was corrected to particle size as found at page 9, lines 6 to 8. Support for new claim 21 is found at page 4, lines 8 to 12; at page 2, line 31 to page 3, line 1; at page 3, lines 8 to 9; at page 23 (Example 9); at page 7, lines 27 to 29; at page 8, line 30 to page 9, line 32 and at page 11, lines 9 to 26. Support for new claim 22 is found at page 4, lines 10 to 12 and at page 23 (Example 9). Support for new claim 23 is found at page 4, lines 10 to 12; at page 2, line 31 to page 3, line 1; at page 3, lines 8 to 9; at page 23 (Example 9); at page 7, lines 27 to 29; at page 8, line 30 to page 9, line 32 and at page 11, lines 9 to 26. Further support for the amendments is detailed under sections dealing with the Examiner's objections and rejections.

Response to 35 U. S. C. §102(b) Rejection of Claims 1 and 3-6

Claims 1 and 3-6 have been rejected under 35 U.S.C. §102(b) as being anticipated by a non-patent publication, Abstract, American Chemical Society, Book of Abstracts, 218th ACS National Meeting, Aug. 22-26 (1999), INOR 423, XP009013883 (J. G. Matisons *et al.*). Applicants have provided Examiner with Abstract and search of related articles and have found no related article. Applicants respectfully traverse the rejection and contend the amendments made to independent claims 1 and 3-6 obviates the Examiner's rejection. Applicant have amended claim 1, incorporating the limitation that olefin-based materials are one or more polymers having a plurality of free olefin groups.

Support for the amendments is found at page 7, lines 27 to 29; at page 8, line 30 to page 9, line 32 and at page 11, lines 9 to 26.

Applicants respectfully submit that all of the limitations of a claim must be taught in establishing a *prima facie* case of anticipation pursuant to 35 U. S. C. §102(b). Matisons *et al.* does not teach the Applicants invention as claimed. Matisons *et al.* teaches supported metallocenes prepared by reacting silica with a vinylsilane followed by reaction with a hydrozirconocene. Thus, independent claim 1 and dependent claims 3-6 as amended are patentable over the prior art document of record. Applicants respectfully submit that the Examiner's arguments with respect to the §102(b) rejection have been obviated for amended claims 1 and 3-6.

If the Examiner finds that there are some remaining issues to be resolved, Applicants would appreciate the Examiner to grant them a discussion or another interview pursuant to 37 C. F. R. §1.133, to clarify any issues and to place the Application in better condition for allowance. Please charge any fees associated with this response to Deposit Account No. 18-1850. Applicants invite the Examiner to contact the undersigned to discuss any issues related to this application by telephone.

Respectfully submitted,

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